

Nonpoint Source Measurement Framework: Advancements, Next Steps and Lessons Learned in Indiana and Arkansas that Can Inform Progress Tracking in All HTF States

Gulf of Mexico Hypoxia Task Force Meeting

Baton Rouge, LA
May 16, 2019

*Julie Harrold, Indiana State Department of Agriculture
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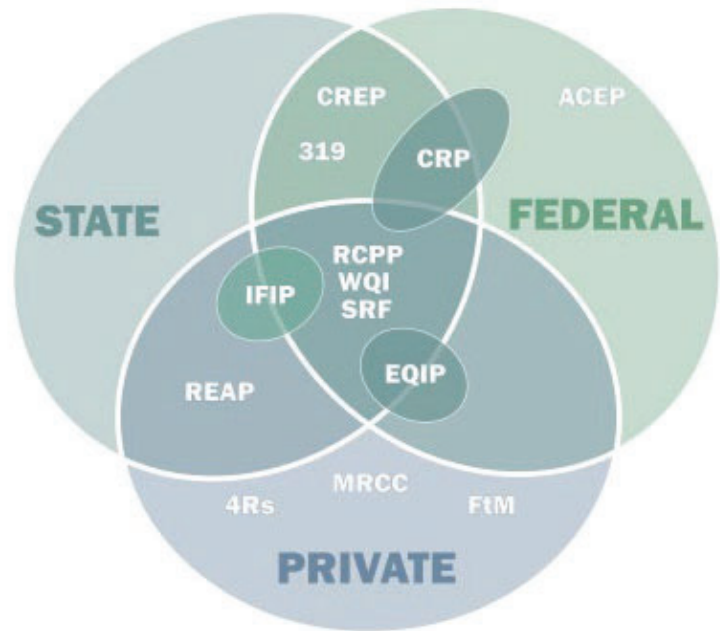
Background on NPS Measures Workgroup

- NPS Measures workgroup tasked with identifying a common measure
 - All States could reasonably report
 - What is being done on-the-ground
- Not the only measure
 - Many tools for measures of water quality
- Use to report and track progress
 - Inform and improve implementation



Background on NPS Measures Workgroup

- Practice Summary:
 1. State and/or Local-level
 2. Federal-level
 3. Private/NGO-level
- Categories/parameters identified
 - Consistency of NPS Framework among states
- Identified challenges and barriers
 - Walton Family Foundation Grant
- Completed Final Draft of NPS Measures Progress Report

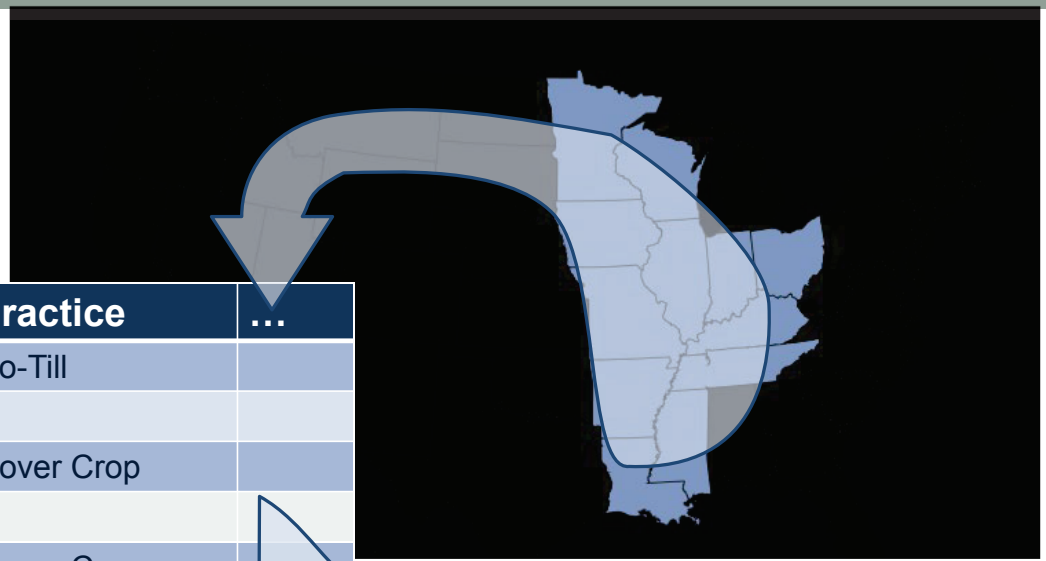


https://www.epa.gov/sites/production/files/2018-05/documents/nps_measures_progress_report_1-_may_2018.pdf

NPS Measures Progress Report

- Barriers:
 - Potential for duplication and over reporting (without certain information)
 - Ex. Combined state/fed sources for 1 practice (CREP), practices established on non-cropland, etc.
 - Consistent reporting of practices (similar units)
 - Account for longevity of practice(s)
 - Variability amongst practices and reported information – variability in practice names, acres treated, etc.
 - Location of practice installation and downstream effects
 - Private Implementation is a huge part of the story
- Walton Family Foundation project:
 - Resources to help coordinate continued development of the **NPS Measures Framework**
 - Previously working with Indiana and Arkansas
 - Working with Illinois, Kentucky, and Minnesota in 2019
 - Filling data gaps, reviewing data sources, supporting science assessments

State	HUC 8	Practice	...
Arkansas	08020304	No-Till	
:	:	:	
Illinois	07090006	Cover Crop	
:	:	:	
Indiana	05120111	Cover Crop	
:	:	:	
Kentucky	05140104	Wetland	
:	:	:	
Minnesota	07010203	Grass Waterway	



**% N and P
Non-Point Source
Load Reduction**

NPS Measurement Framework: Indiana

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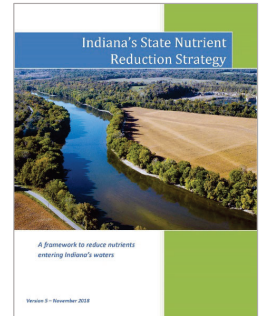
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Julie Harrold, ISDA Program Manager for CREP and Water Quality Initiatives

Supporting the State Nutrient Reduction Strategy

- Indiana’s State Nutrient Reduction Strategy (SNRS) was developed to “capture statewide, present and future endeavors in Indiana which positively impact the State’s waters as well as gauge the progress of conservation, water quality improvement and soil health practice adoption in Indiana”.
- The Indiana SNRS represents the state’s commitment to reduce nutrient runoff into Indiana’s waters from point sources and non-point sources.

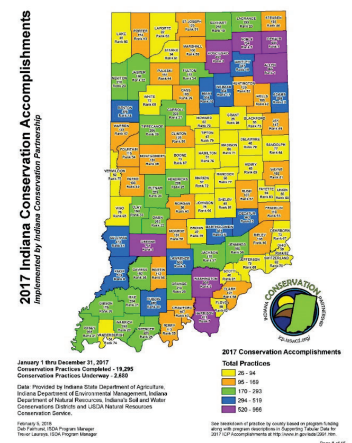


Indiana’s current process of capturing Nutrient Load Reductions

- Since 2013, Indiana annually collects conservation practice data from conservation partners for all federal and state programs.

Supporting Tabular Data for 2017 ICP Conservation Accomplishments
2017 Total Practices Installed by County based on Program Funding - Map on Page 8

COUNTY	ACEP	AWEP	CREP	CRP	CSP	CWI	EQIP	IDEM	INFA	LARE	OTHER	WHIP	WRP	TOTAL
ADAMS	0	0	1	87	0	4	293	0	13	0	0	0	0	398
ALLEN	0	0	0	219	0	0	712	0	32	0	0	3	0	966
BARTHOLOMEW	0	0	0	179	0	0	157	0	18	5	0	0	0	359
BENTON	0	0	0	114	0	6	220	0	31	0	7	0	0	378
BLACKFORD	0	0	0	23	0	13	14	0	5	0	0	0	0	55
BOONE	0	0	0	20	0	3	13	0	31	6	0	0	0	78
BROWN	0	0	1	0	0	0	46	0	0	0	0	0	0	47
CARROLL	0	0	1	42	0	4	157	0	19	0	0	0	0	223
CASS	0	0	0	40	8	0	109	0	9	0	0	3	0	169



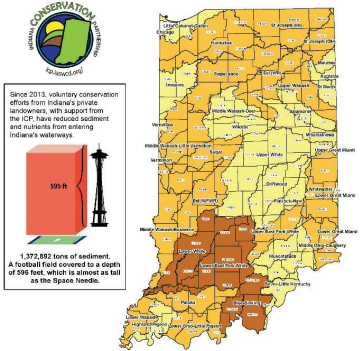
- Currently measure impact of assisted conservation practices using the EPA Region 5 Model to calculate Nutrient Load Reductions (NLRs).
 - <http://it.tetrattech-ffx.com/steplweb/default.htm>



Sediment, Nitrogen, and Phosphorus Reductions

Sediment

2013-17 Cumulative Sediment Load Reductions
1,372,892 Tons



Based on EPA Region 5 Model analyses conducted on 21,957 conservation practices modeled by the Indiana Conservation Partnership January 2013 thru December 2017. This effort does not include the many unassisted practices designed and installed solely by private landowners without ICP assistance.

The summative analysis encompassed a breakdown of 2013 thru 2017 conservation practices by Region including 1, 5, 10, 15, 20 and 40 years. The map reflects all of the practices modeled for 2013 thru 2017 practices with a lifespan of one year and 2017 practices with a lifespan of 75 years.

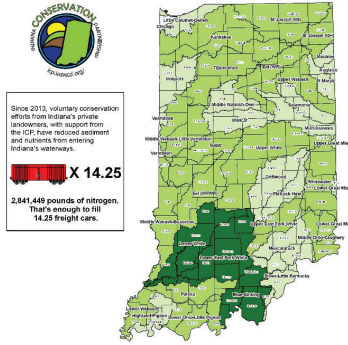
To learn more about Indiana's Nutrient Reduction Strategy visit <http://www.in.gov/indnr2017>

For questions and comments email ISDAAdmin@redaction@isda.in.gov

March 1, 2018
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Nitrogen

2013-17 Cumulative Nitrogen Load Reductions
2,841,449 Pounds



Based on EPA Region 5 Model analyses conducted on 21,957 conservation practices modeled by the Indiana Conservation Partnership January 2013 thru December 2017. This effort does not include the many unassisted practices designed and installed solely by private landowners without ICP assistance.

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Reductions in dissolved nutrients, such as dissolved reactive phosphorus (DRP) and nitrate (NO3), are not accounted for by the Region 5 Model.

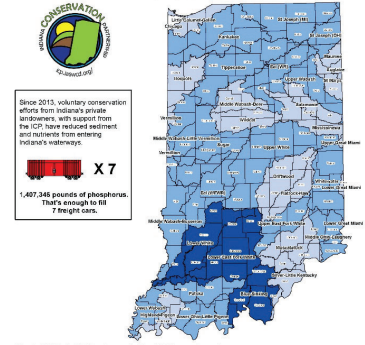
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Phosphorus

2013-17 Cumulative Phosphorus Load Reductions
1,407,346 Pounds



Based on EPA Region 5 Model analyses conducted on 21,957 conservation practices modeled by the Indiana Conservation Partnership January 2013 thru December 2017. This effort does not include the many unassisted practices designed and installed solely by private landowners without ICP assistance.

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*All these maps can be found in the 2017 ICP Conservation Accomplishments Report, which can be found on the ISDA website at <http://www.in.gov/isda/2991.htm>



What Indiana is missing

- The current method/model used to determine NLRs captures only nitrogen and phosphorus reductions that are tied directly to sediment.
 - Nutrients that are dissolved and carried by runoff waters or snowmelt are not accounted for in this method.
- Therefore, we are missing the dissolved nutrients (nitrate and dissolved phosphorus).
- Also missing practices that can't be run through the Region 5 model due to the practice not being tied to sediment (Ex. nutrient management)



Strengthening Indiana's Framework for Load Reduction Estimation

- ***Nutrient Reductions from Conservation Practices: A Workshop to Strengthen Indiana's Framework for Load Reduction Estimation, November 2, 2018***

❖ Workshop Purpose

- To initiate a discussion in Indiana on ways to strengthen and enhance our existing method of capturing sediment and nutrient load reductions, and to include capturing dissolved nutrients, as well as find a potential path for moving forward.



Goals and Outcomes from the Workshop

- Determine how we can capture nutrient load reductions for the dissolved components.
- Better model our nutrient load reductions from conservation practices, and better determine the impact of various practices on water quality.
- Use this as one of the tools to work toward the development of a Science Assessment for Indiana, to determine the impact of nutrient reductions from various practices on water quality.
- Move towards determining “practice-efficient targeting”.



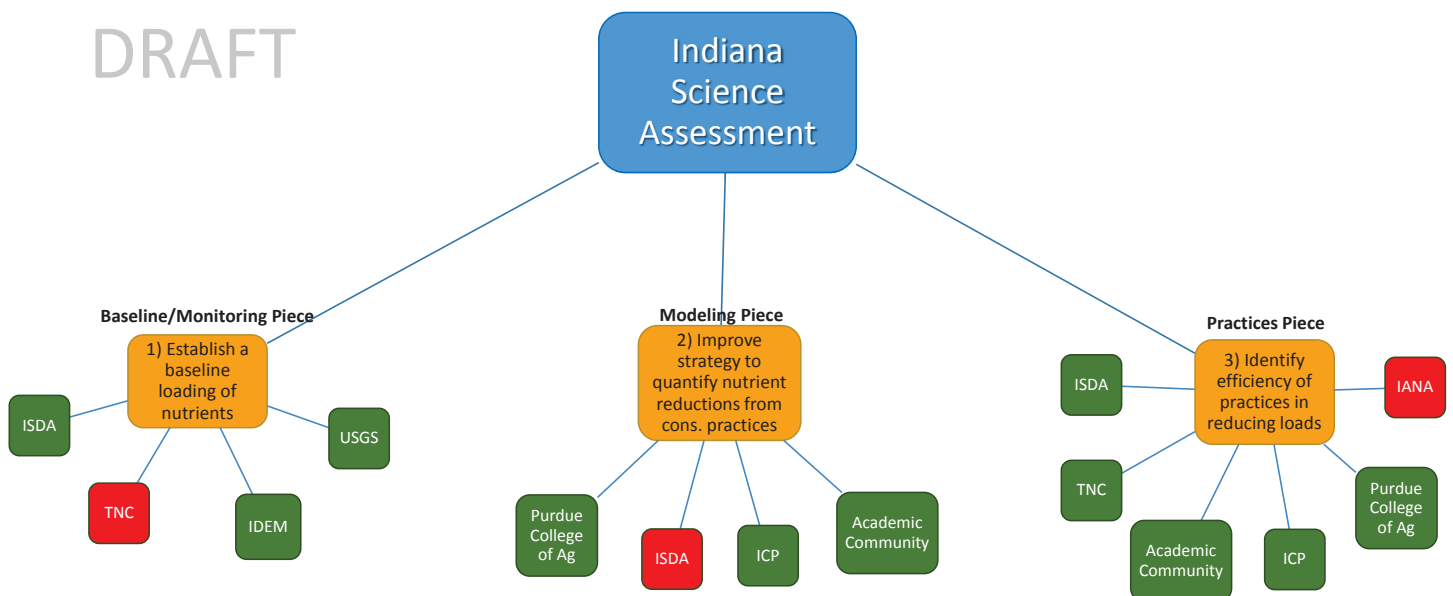
Development of an Indiana Science Assessment

- Agreed upon at the workshop that Indiana needs a science assessment, and that is it critical for moving Indiana’s nutrient reduction strategy forward.

❖ Three main components:

- 1) Determine loads and establish a baseline load of nutrients leaving the State.
- 2) Develop a consensus-based strategy for quantifying nutrient reduction from conservation practices, including dissolved nutrients.
 - Expand upon the use of the Region 5 Model that captures sediment-bound reductions
- 3) Identify practices that are most efficient in reducing N & P loads
 - Collective list and consistent definitions of best management practices
 - Will allow for prioritization of future conservation efforts: “Practice-efficient targeting”

DRAFT



NPS Measurement Framework: Arkansas

Gulf of Mexico Hypoxia Task Force Meeting

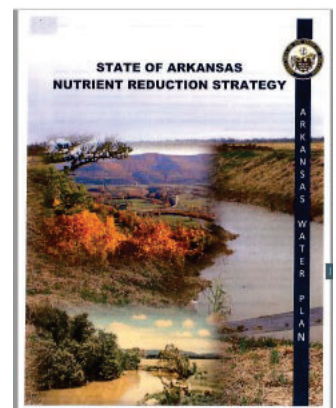
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J. Ryan Benefield, P.E., Arkansas Natural Resources Commission

Goal

- To develop an Arkansas specific measurement framework and consensus on expected nutrient reduction efficiencies associated with individual and suites of best management practices.
- The identification of practices needing additional research for future refinements of the framework.



Approach

- Expert Panel of 25
 - Federal Agencies (EPA, USDA-NRCS, USDA-ARS)
 - State Agencies (ANRC, ADEQ)
 - State Universities (UA, UACES, ASU)
 - NGO(IRWP, TNC, ARFB)

- 2 Meetings(and many emails)
 - 4 Hour Planning Meeting
 - 2 Day Offsite Retreat
 - Final Report



Practice Suites and Individual Practices

Practice Suite
Irrigation Water Management Practices Suite
Tailwater Recovery Practices Suite
Reduced Irrigation Water Use Practices Suite
Row Crop Soil Nutrient Management Practices Suite
Conservation Tillage and Cover Crop Suite
Pasture Management Practices Suite

Individual Management Practice
Prescribed Grazing
Stream Exclusion/Access Control
Watering Facility
Heavy Use Area Protection

Individual Management Practice
No-Till/Conservation Tillage
Cover Crops
Nutrient Management Plan
Tailwater Recovery System
Forested Riparian Buffer – Cropland
Forested Riparian Buffer – Pasture
Grassed Riparian Buffer – Cropland
Grassed Riparian Buffer – Pasture
Warm/Cool Season Grasses



Research Needs

- Streambank Stabilization/restoration and riparian buffers
- Timber management practices
- 2-stage ditches
- Irrigation management practices, including tailwater recovery systems and PipePlanner/PHAUCET
- Variable Rate fertilizer application



Lessons Learned

- The numbers will be wrong but very useful.
- Scientists take time to get used to the concept of “Best Professional Judgement”.
- Folks in Arkansas will debate for an hour over 2-3 percentage points of phosphorus reductions.
- Completing the framework is easy compared to gathering the data necessary to adequately report the nutrient reductions.
- The framework will need to be regularly updated and improved.

